

Spring 2013

The Quarterly Hail

National Weather Service - Hastings, Nebraska

Volume 3, Issue 1

Notes From the Meteorologist In Charge

Hello again! It is my pleasure to lead off this edition of the Quarterly Hail with a quick note.

Even though, as I write, we are surrounded by this beautiful white stuff called snow, that will not be the case for long. The two biggest threats we see into the spring months would be flooding and severe weather. Of course, we can not ignore the fact we are still in the midst of a drought.

It may seem strange to even be talking about flooding since we are in the grips of the drought, but if the current weather pattern holds for a few more weeks, the snow pack over the mountains and here on the plains will continue to deepen. That means the potential for a lot of water on the ground, running off in a short period of time once melting begins. No one knows exactly what the future will hold, but I assure you that your NWS family will be watching and sharing their concerns through forecasts and warnings as the spring unfolds.

As for severe weather, the staff is already practicing and sharpening their skills to issue the most accurate and timely severe thunderstorm and tornado warnings possible this spring and summer.

Speaking of the staff, they are taking a lot of training late this winter as they prepare for our radar upgrade, some minor changes in our warning products and a few other things all aimed at improving our products and services so we can focus on giving you the best services we can provide.

Also, we have added a new member to our staff. His name is Jeff Halblaub. He hails from Michigan, but is excited to live amongst the people of Nebraska and Kansas. Jeff is very excited to experience the weather the plains bring. We are very pleased he joined our staff and are really looking forward to his assistance in forecasting our weather for years to come.

Finally, you probably are quite aware of the financial issues facing the federal government. We in the Weather Service are not immune. Our budgets have been slashed severely the last few years. We continue to search for ways to more efficiently serve you. For instance, we may not be able to make as many trips out to fix gauges and we may even have to skip a spotter talk or two, but we will remain vigilant in our primary mission of protecting lives and property due to weather or water hazards!

I wish you all a safe spring. We thank you for your data, which is critical to us in our forecast processes, and for your volunteerism. Our hats are off to you!

Steve Eddy
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Special Points of Interest:

- Find out more about the dual polarization radar, being installed soon.
- When is the Spotter Presentation in your area?
- Learn about our latest GIS project!
- When are the Kansas and Nebraska Tornado Safety Drills?

Spring Time is Severe Weather Awareness Time!

Each year, every National Weather Service office in the nation makes educating the public about the natural weather related hazards in their area one of the highest priorities. Here in south central Nebraska and north central Kansas our focus is severe weather, primarily on high winds, large hail, heavy rain and tornadoes.

With an array of weather information sources available, it's important to reach out to our customers.

One of the main methods we use is conducting severe weather awareness and storm spotter presentations in most counties. We will discuss a variety of topics, including storm structure, proper reporting, radar and many others. All of the presentations are an opportunity to learn and ask questions of a NWS warning and forecast meteorologist.

A schedule of presentations is included in this newsletter on the following pages. Look it over and find the talk near your home. We hope you stop by and say "Hello."



Come to learn the proper name of this cloud feature and more!

Rating a tornado is both an art and a science. Ratings are rooted in the Enhanced Fujita (EF) Scale. NWS meteorologists base the rating on the damage done by the tornado to various types of structures.

Based upon structural tests, a wind speed estimate can be made from the degree of damage done (superficial, total devastation, etc.).

Look for the EF-Scale the next time you want to know how strong a tornado was.

EF 0	65-85 mph
EF 1	86-110 mph
EF 2	111-135 mph
EF 3	136-165 mph
EF 4	166-200 mph
EF 5	Over 200 mph

Tips For Reporting Hail and Wind Speed

The National Weather Service will issue a Severe Thunderstorm Warning when hail is expected to be 1" (quarter size) or larger and/or when winds are expected to be 58 MPH or greater.

When reporting hail, it is best to measure the hail when safe to do so. If you are not equipped with a ruler or other measuring instrument, hail size can be related loosely to coins or athletic balls, as in the table below (right).

It's often difficult to estimate wind speed, especially in the plains where there are few physical indicators to observe damage. Below (left) is the Beaufort Wind Force Scale for estimating wind speeds. This is only a rough guide. Actual damage may occur at weaker or stronger speeds.

Wind Speed (mph)	Effects		
25-31	Large branches in motion	BB	Less than 1/4"
32-38	Whole trees in motion	Pea	1/4"
39-54	Twigs break off trees, wind impedes walking	Dime	7/10"
55-72	Damage to TV antennas, large branches break off trees	Penny	3/4"
73-112	Surfaces off roofs peeled off, windows broken, trailer homes overturned	Nickel	7/8"
113+	Roofs blown from houses, weak buildings and trailer homes destroyed, large trees uprooted, train cars blown off tracks	Quarter	1"
		Half Dollar	1 1/4"
		Walnut or Ping-Pong Ball	1 1/2"
		Golf Ball	1 3/4"
		Lime	2"
		Tennis Ball	2 1/2"
		Baseball	2 3/4"
		Large Apple	3"
		Softball	4"
		Grapefruit	4 1/2"

2013 Spring Severe Weather Awareness Presentations

All presentations begin at 6:30 P.M. and last 75 to 90 minutes (unless otherwise noted).

Date	County	City	Location
March 4	Mitchell	Beloit, KS	NC Kansas Tech. College Conference Room
March 5	Rooks	Plainville, KS	Plainville Fire Hall
March 6	Phillips	Phillipsburg, KS	Phillipsburg Fire Hall
March 7	Smith	Smith Center, KS	Strader Center
March 11	Dawson	Cozad, NE	Cozad Fire Hall
March 11	Osborne	Osborne, KS	Public Library
March 12	Nuckolls	Lawrence, NE	Lawrence Fire Hall
March 12	Phelps	Holdrege, NE	Phelps County Courthouse
March 13	Valley	Arcadia, NE	Arcadia Community Center
March 14	Webster	Blue Hill, NE	Blue Hill Community Center
March 18	Hamilton	Aurora, NE	Aurora Fire Hall
March 19	Greeley	Greeley, NE	Greeley County Courthouse
March 19	Howard	Boelus, NE	Boelus Civic Center
March 19	Nance/Merrick	Palmer, NE	Palmer Legion Hall
March 20	Jewell	Mankato, KS	Community Center
March 23	Advanced Spotter Talk (8:30 am to Noon)	Stromsburg, NE	Stromsburg Fire Station
March 25	Fillmore	Geneva	Public Library
March 25	Clay	Clay Center, NE	Clay County Fairgrounds
March 26	Furnas	Holbrook, NE	Community Center

2013 Spring Severe Weather Awareness Presentations

All presentations begin at 6:30 P.M. and last 75 to 90 minutes (unless otherwise noted).

Date	County	City	Location
March 26	Gosper	Johnson Lake	Johnson Lake EMS Building
March 27	Hall	Grand Island, NE	City Hall—Council Chambers
April 3	Sherman	Loup City, NE	Community Center
April 6	Advanced Spotter Talk (8:30 am to Noon)	Aurora, NE	Aurora Fire Hall
April 20	Advanced Spotter Talk (8:30 am to Noon)	Holdrege, NE	Phelps County Courthouse
May 11	Advanced Spotter Talk (8:30 am to Noon)	Grand Island	City Hall— Council Chambers

Employee Spotlight - Mike Moritz, Warning Coordination Meteorologist

Always interested in weather, I never wanted to be anything else but a “weatherman”. With that in mind, I originally attended college at the University of Oklahoma. After 2 ½ years, I transferred back to the University of Nebraska-Lincoln and completed my degree in Meteorology/Climatology. While in Lincoln, I was lucky enough to work as the weekend weathercaster at KOLN/KGIN-TV. I gained a ton of experience producing a 3-minute weathercast and had a lot of fun doing it. After graduation, I attended graduate school at the University of Wyoming in Laramie. Laramie is a beautiful place, but after waking up on June 1, 1993 to a snow storm, I decided it was time to get out of Laramie and get a job.



I was hired at the Grand Island NWS office in August 1993 and transferred to the Hastings office in 1995. I was lucky enough to experience both the old, outgoing technology and the new, incoming technology. In 1995, I was hired as general forecaster at the Hastings office and then as a Senior Meteorologist in the fall of 1997. Like nearly everyone in the NWS, public service has been the focus of my career. In particular, I enjoy public speaking and teaching, though I am a bit of an introvert by nature. In October 2010, I was hired as the Warning Coordination Meteorologist at NWS Hastings. This affords me the opportunity to work with emergency managers, schools, the media, local, state and federal agencies and the general public regarding decisions support services, weather and weather safety/preparedness.

I married the former Penny Krzycki in 1994 and we are the proud parents of three boys. Andrew is 14 years old and a freshman at Hastings High School. Benjamin is 12 years old and in 6th grade at Hastings St. Cecilia Middle School and Carson is 10 years old and in the 5th grade at St. Michael’s Elementary School. All the boys are active in various sports, church and school related activities. Penny has been an Ophthalmologic Technician at Geiger & Dietz Ophthalmology in Hastings since 2000.

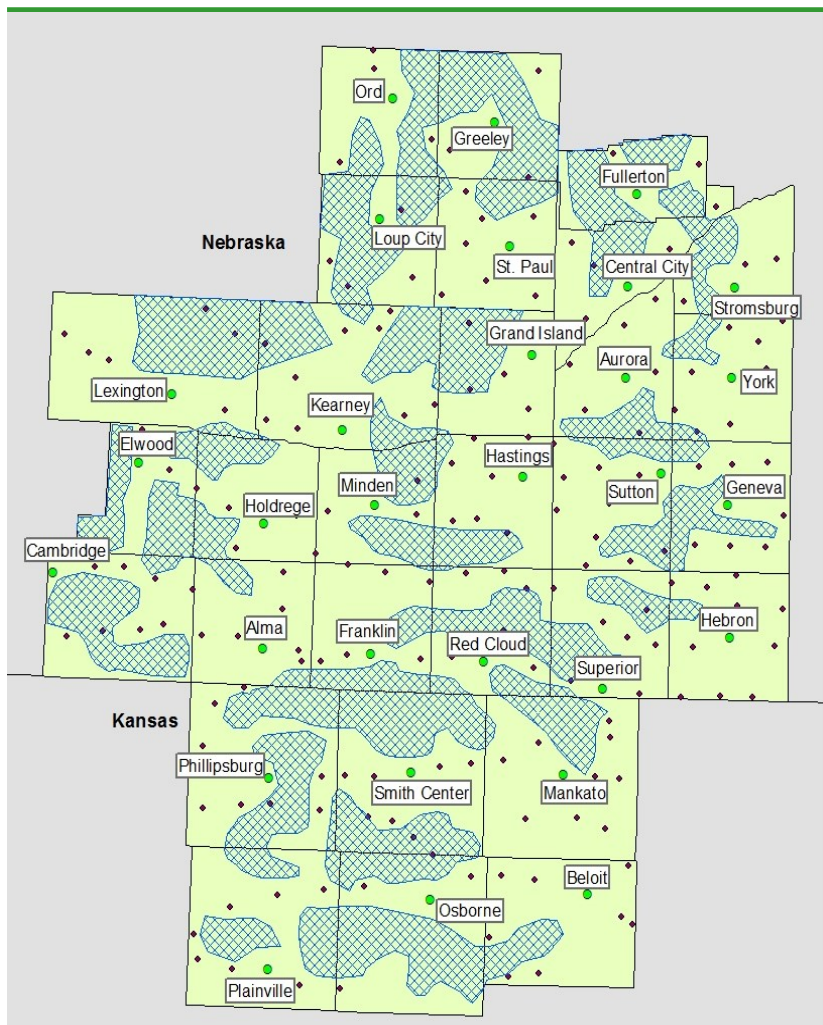
Family related activities are the focus of my off-work time. I have coached just about every sport possible the past several years, whether I knew what I was doing or not. I enjoy golfing and still play basketball from time-to-time. For the 6th straight year, our family teamed with Penny’s parents and her identical twin sister’s family, to go on summer vacation. All 12 of us traveled to Oregon and had a great time in both the mountains and along the coast. I am sure the kids have already planned this year’s travels to some exotic place.

Weather Sudoku!



Rules of Sudoku: The object of Sudoku is to fill in the other empty cells with numbers (in this case pictures associated to numbers) from 1 - 9. A number can only appear once in each row, column and region. A row consists of 9 cells from left to right. A column consists of 9 cells from top to bottom, and a region consists of 9 cells grouped in rows of 3 cells, such as the highlighted red square.





One of our latest endeavors in our GIS program was to highlight where we are lacking spotters. During the severe weather season we rely heavily on our spotters to be our eyes in the field. We are constantly in touch with our cooperative observers and spotters whenever a storm is threatening an area. There is always a need to expand our spotter network so that there is more coverage. Obviously, we will never have every square inch of our area covered, but we can certainly try to expand our network.

With this latest map, we have attempted to pinpoint where we need more spotters. Our first step was to load our spotter database into GIS, then we simply highlighted locations that were blank. These blank areas are shaded blue on the map and represent where we are lacking spotters. The dots on the map represent cities across our area with only a few major cities labeled.

If you know someone in any of the blue shaded areas that would like to be a spotter, please have them contact Mike Moritz via email at michael.moritz@noaa.gov or call (402) 462-4287. Thanks!

Cooperative Observer Awards - Mike Reed, Hydrometeorological Technician

The National Weather Service proudly presented Rhonda Berns with the 20 Year Length of Service Award on December 14, 2012. Mrs. Berns has been the official Cooperative Weather Observer for the National Weather Service near Blue Hill, Nebraska, since 1992.

During her 20 years of data collection, she has measured 589.33 inches of rain (over 49 feet) and 549.4 inches (over 45 feet) of snow. The highest rainfall measured in a single 24 hour period, since 1992, was 5.25 inches on July 4, 2000, and the highest snow fall measured in a 24 hour period during the same timeframe was 16.0 inches on October 26, 1997. The wettest year during this time frame was 1993, with 47.02 inches of rain. The winter with the heaviest snow was the winter of 1992-1993, with 47.5 inches of snow.

Each morning, Rhonda faithfully measures and records the amount of precipitation that falls in a 24 hour period. The data measured is then transmitted electronically to the National Weather Service office in Hastings, Nebraska, where it is recorded. These reports are then used to support weather forecasts and warnings in addition to various climate reports made available to the public through various sources, including the internet. At the end of each month, the data is checked for quality control prior to submission to the National Weather Service national archiving center, located in North Carolina. Climate data is used in every aspect of our national economy, including insurance companies, agriculture, water resource industries, and manufacturing, as well as governmental agencies at local, state and federal levels. Thanks to the dedication of Mrs. Berns, the climatic database for the Blue Hill area continues to be built with reliable information provided by her reports.

Notes from MOM (Mind of Marla) - Marla Doxey, Data Acquisition Program Manager

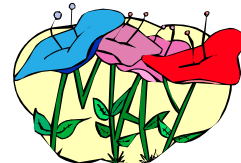


Another snow season under our belts, well, almost anyway. We all know how those late winter/early spring snow storms can sweep across the plains. At least we know the snow will melt quickly this time of year. It was a rather dry winter by Nebraska/Kansas standards. Normal spring showers would be quite welcome. I would say a bit more than normal would be nice but we have to be careful what we ask for.

Thank you all for braving the weather to go out and measure your snow fall and snow depth. We really appreciate it.

As the weather continues to warm and become more like spring, you can put the funnel and smaller tube back in your gauge. Just remember to take it back out should a late winter storm strike. Heavy snow will quickly plug the funnel and prevent it from falling inside the outer can.

Looking ahead to spring and summer; just a reminder that hail is not considered snow. You would just enter 0.0 in the snow fall column. However, it is considered snow depth (ice) if at observation time the ground still has close to 50% or more of the ground covered. **Please** enter the size of the hail and the time it occurred in Remarks. **Also, please call the office and let us know when it happens!** This is very beneficial. When referencing the size, please do not use marble or hen egg as both of these have several different sizes attributed to them. Coins are a good reference as a dime, quarter, half dollar, never change in size.



We are starting to schedule our annual visits. In order to be most efficient with our budget, there are times where we will combine trips with other outreach activities such as Storm Spotter talks. In that instance don't be surprised if we stop by in the late afternoon or early evening hours. We will call ahead to let you know that way you know to expect us and will also give you the opportunity to let us know what supplies you need and if anything is broken. Of course you are all invited to attend the Storm Spotter talks scheduled for your county. Not all counties will have talks this year.

We Want to Hear from You!

Want to know how a tornado forms? Are you interested in how a rainbow is made? Or you just want more information about the Christmas Blizzard of 2009? Let us know!!

Every edition of the Quarterly Hail is published for you, our fans and customers. We want to write about things that **YOU** are interested in. Send us an email or drop us a line in the mail and let us know what you would like to see in each edition of the Quarterly Hail. Whether you are a weather fan like us, or just have a few weather questions you want answered, we want to hear from you! In the next editions of the Quarterly Hail, we will try to provide articles that reflect the interests of our customers. Each newsletter we will choose two or three customer questions to answer in the new Frequently Asked Questions section.

Even if you're not sure what you want to see in the newsletter, we appreciate any feedback! Let us know how we are doing. Did we have a typo in the last newsletter? Was the newsletter informative?



Send an email to michael.moritz@noaa.gov, or write or call:

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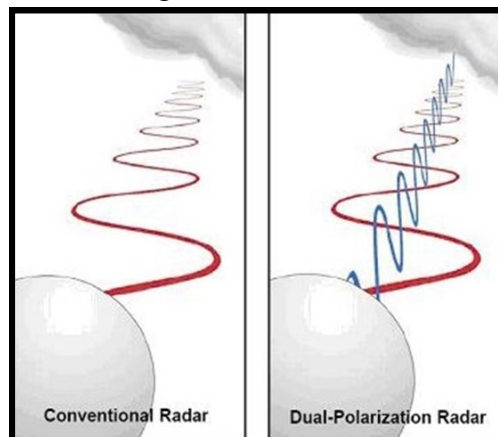


Be sure to find us on Facebook at
www.facebook.com/US.NationalWeatherService.Hastings.gov

Dual Polarization Radar - *Cindy Fay, Lead Forecaster*

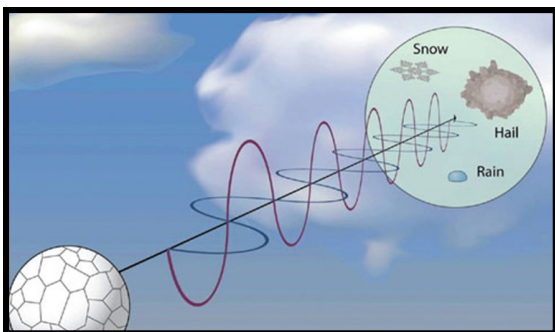
The Hastings National Weather Service Doppler radar (KUEX) located in Blue Hill, NE will be upgraded to dual polarization (dual pol) technology beginning March 25, 2013. The installation and upgrade is expected to be complete no later than April 5, 2013. The dual pol technology is the most significant enhancement to the radar since the Doppler radar was installed in 1993.

Current NWS Doppler radar transmits and receives pulses in a horizontal orientation, and the radar only measures the horizontal dimensions of targets (cloud and precipitation droplets). Dual pol radar transmits and receives pulses in both a horizontal and vertical orientation. Since both the horizontal and vertical dimensions of targets are measured with dual pol, we can obtain better estimates of the size, shape and variety of the targets. The dual pol technology will add additional products to the suite of radar data available to meteorologists, further improving watch, warning, and advisory decision support across the country. The new radar technology will benefit forecasters in the following ways:



- Help categorize the type of precipitation that is falling (hail vs rain, wet snow vs. rain), and improve total precipitation amounts
- Improve the ability to identify areas of heavy rain rates for flash flood potential
- Better detection and mitigation of non-weather radar returns (ground clutter, birds, insects)
- Easier identification of the melting layer for enhanced forecasting of snow levels and detection of icing
- Aid in confirming that a tornado has touched down and is causing damage
- New hail signatures for severe thunderstorms

The new products associated with dual pol include differential reflectivity, correlation coefficient, specific differential phase, melting layer, a hydrometeor (rain drops, ice crystals, etc.) classification algorithm, and quantitative precipitation estimates. Differential Reflectivity is a ratio of the reflected horizontal and vertical power returns and is a good indicator of drop shape and estimate of average drop size (bigger rain drops have the same shape as a hamburger bun while falling, and dual pol can detect this better). Correlation coefficient aids in distinguishing precipitation from non-precipitation, and helps determine if precipitation targets have the same shape and type (pure snow or rain) or if a mixture exists (rain and snow). Specific differential phase identifies regions of heavy rain. The higher the values, the more intense the rain will be, even if hail is present.



Identification of the melting layer will help determine snow levels in the cold season, and in the warmer months, it will lead to less hail contamination in the precipitation estimates associated with thunderstorms. The melting layer also helps in the classification of the precipitation returns. The hydrometeor classification algorithm uses the dual pol data to distinguish between the different types of radar returns (ground clutter, biological scatters such as insects and birds, dry snow, wet snow, ice crystals, graupel, big rain drops, light and moderate rain, heavy rain, and a rain/hail mixture). The quantitative

precipitation estimation uses the radar data to provide an estimate of the rainfall, and as the radar classifies between meteorological targets and non-meteorological targets, the non-meteorological targets should not be accumulated as rainfall.

WFO Hastings looks forward to the radar upgrade and utilizing the benefits of the dual pol technology. During the installation, KUEX radar will be unavailable, and adjacent National Weather Service radar sites will need to be used, including Omaha (KOAX), North Platte (KLNK), Goodland (KGLD), Dodge City (KDDC), Wichita (KICT), and Topeka (KTWX).

2012 Precipitation and the Drought - *Ryan Pfannkuch, General Forecaster*

Needless to say, the latter two-thirds of 2012 will long be remembered for the onset of the worst droughts in several decades. Although essentially the entire Hastings coverage area measured below normal precipitation during the year, there was a noticeable contrast in precipitation deficits between northwest and southeast portions of the area. A prime example of this contrast is illustrated by a comparison of recent precipitation trends between Ord and Grand Island, NE and Beloit, KS. At the Ord Airport, total precipitation between Oct. 1-Dec. 31 was 0.79", or 22% of normal. At Grand Island the total precipitation was 2.97" (81% of normal) and Beloit totaled 3.17" (77% of normal).

The main reason that portions of the area ended the year on a positive note had to do with December. For most, it was the first month since either February or April 2012 to feature above normal precipitation. During December, a mid-month rainfall event was followed by two rather significant snow storms, one that brought blizzard conditions from the 19-20th, and another on the 31st that brought 4-8" of snow to north central Kansas along with far southern fringes of Nebraska. As a result, the majority of the 30 county area received at least 1-1.5" of liquid equivalent precipitation during the month, considerably higher than normal December precipitation. However, it is important to keep in mind that just because December featured above normal precipitation in most areas, this only put a small dent into the ongoing serious drought situation. In general, winter precipitation events during the months of Dec.-Feb. account for less than 10% of total annual precipitation.

December for much of the area followed a very dry November, during which at least half of the 30 county area measured less than one-tenth of normal precipitation. In fact, 26 of roughly 70 cooperative observers within the area either measured zero precipitation or just a non-measurable trace.

Following the ongoing drought situation back to its initial stages, the March-May 2012 time frame featured the warmest spring season on record across nearly the entire area. This allowed the growing season to get off to an unusually early start, and in fact the 2012 growing season was among the longest, if not the longest on record.

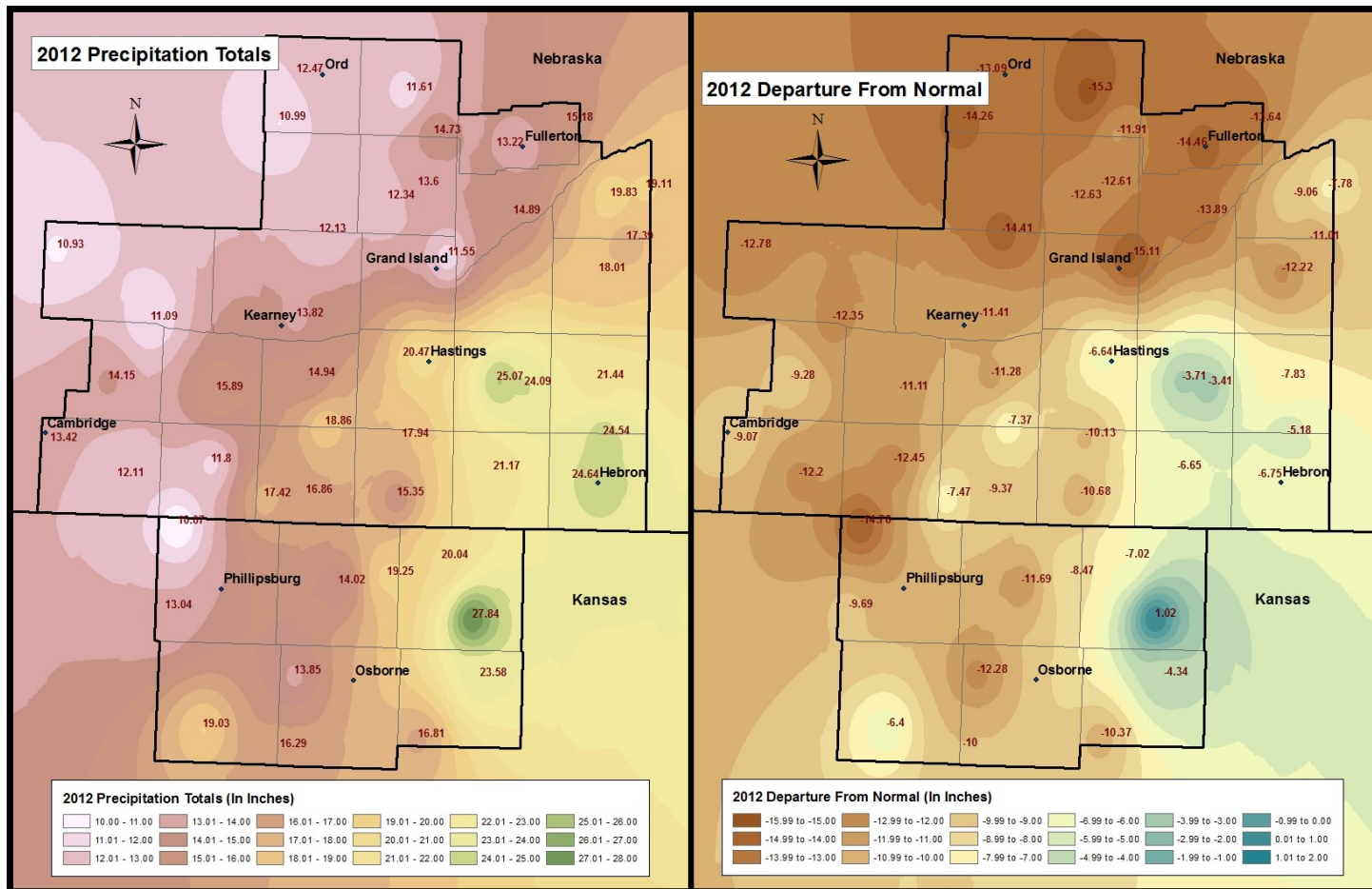
Serious drought problems did not really take hold until June and July, when the combination of above normal temperatures and below normal rainfall arrived in time for the peak crop growing season. During June-Aug., Grand Island recorded its driest summer out of 117 years on record, measuring only 2.37", which was 8.45" below normal. Meteorologically, the primary culprit for the pronounced heat and lack of rain from May through July was a dominant ridge of high pressure in the upper atmosphere.

For much of the area, the calendar year of 2012 has gone down as one of the top 10 or 20 driest years on record. For a few spots including Grand Island, it was in fact the outright driest calendar year on record, only measuring 11.55", eclipsing the previous low point of 12.01" in 1940.

From the included tables, it is apparent that most of the 30 county area measured between 40-80% of normal precipitation in 2012, with the driest spots clearly centered within counties in Nebraska near/north of Interstate 80 and near/west of Highway 281. Also see the following page for graphics regarding 2012 precipitation.

Location North Central Kansas	2012 Precipitation	Normal	Departure From Normal	% of Normal
Alton 2 SW	13.85	26.13	-12.28	53
Beloit	23.58	27.92	-4.34	84
Burr Oak	20.04	27.06	-7.02	74
Plainville 4 WNW	19.03	25.43	-6.40	75
Smith Center	14.02	25.71	-11.69	55
Location South Central Nebraska	2012 Precipitation	Normal	Departure From Normal	% of Normal
Cambridge	13.42	22.49	-9.07	60
Lexington 6SSE	11.09	23.44	-12.35	47
Clay Center 6ESE	24.09	27.50	-3.41	88
Elwood 8S	14.15	23.43	-9.28	60
Franklin	16.86	26.23	-9.37	64
Fullerton	13.22	27.68	-14.46	48
Geneva	21.44	29.27	-7.83	73
Grand Island Airport	11.55	26.66	-15.11	43
Greeley	11.61	26.91	-15.30	43
Hastings Airport	20.47	27.11	-6.64	76
Hebron	24.64	31.39	-6.75	78
Holdrege	15.89	27.00	-11.11	59
Kearney Airport	13.82	25.23	-11.41	55
Minden	14.94	26.22	-11.28	57
Ord Airport	11.84	24.94	-13.10	47
Osceola	19.83	28.89	-9.06	69
Ravenna	12.13	26.54	-14.41	46
St. Paul	13.60	26.21	-12.61	52
York 3N	18.01	30.23	-12.22	60

2012 Precipitation and the Drought Continued...



Severe Weather Awareness Weeks and Tornado Drill Information

Kansas Severe Weather Awareness Week

March 4 - 8th

The Tornado Drill will be held Tuesday, March 5th at 1:30 p.m. CST

More information can be found at http://www.crh.noaa.gov/images/ict/pdf/SWAW_2013.pdf

Nebraska Severe Weather Awareness Week

March 25 - 29th

The Tornado Drill will be held Wednesday, March 27th between 10 & 11 a.m. CDT

More information can be found at <http://www.crh.noaa.gov/gid/?n=severeawareness>

<http://www.crh.noaa.gov/images/gid/WCM/SWAW2013.pdf>

The purpose of the drill is to ensure everyone can adequately receive a tornado watch and warning, and to practice any actions which would be taken to protect your life in the event of a real tornado. This tornado drill presents an excellent opportunity for everyone at work, school, or home to practice their safety measures.

This Table Reflects Various Historical Spring Extremes Across The Local Area...

	Hottest Spring High Temp (March-May)	Coldest Spring High Temp (March-May)	Driest Spring (March-May)	Wettest Spring (March-May)	Latest Hard Freeze (28° or less)
Grand Island	104° on 5/29/1934	4° on 3/10/1948	0.77" in 1934	18.24" in 1896	May 29, 1947
Hastings	105° on 5/29/1934	3° on 3/11/1948	1.00" in 1934	16.54" in 1965	May 15, 1907
Kearney	103° on 5/29/1934	5° on 3/10/1948	1.36" in 1934	18.78" in 1977	May 23, 1924
Greeley	101° on 5/24/1967	5° on 3/6/1920	2.05" in 1926	15.89" in 2007	May 18, 2002
Osceola	104° on 5/30/1934	4° on 3/10/1948	2.16" in 1934	18.00" in 1896	May 29, 1947
Cambridge	102° on 5/28/2006	11° on 3/4/1989	1.36" in 1966	16.40" in 1977	May 21, 1946
Smith Center, KS	105° on 5/29/1913	12° on 3/3/1960	1.65" in 1966	13.73" in 1990	May 20, 1924

Spring Climate Outlook Detailed Below...

The latest Spring Outlook from the Climate Prediction Center slightly favors above normal temperatures, but assigns equal chances of above normal, below normal, or near normal precipitation to most all of South Central Nebraska and North Central Kansas.

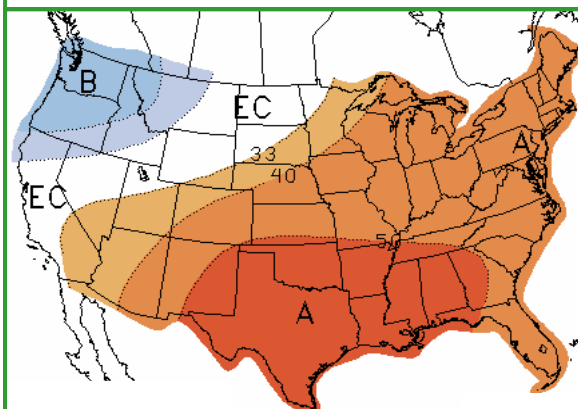
Time Frame: The NWS considers the "Spring" season to be all of March, April and May.

Temperature: The outlook on the right reflects a forecast for the 3-month period as a whole. We tend to view temperatures in the context of a daily or monthly average, but the 3-month outlook accounts for the entire season. **Red/Orange** colors represent "warmer" than normal and **Blue** colors represent "cooler" than normal. The white area labeled "EC" designates regions with Equal Chances of having above, near or below normal temperatures. This means there is no clear trend in the forecast analysis to support one of these outcomes over another. As the image shows, the forecast for South Central Nebraska and North Central Kansas depicts a 40-50% chance of realizing above normal spring temperatures. However, the outlook doesn't indicate *how much* above normal the seasonal temperature might be.

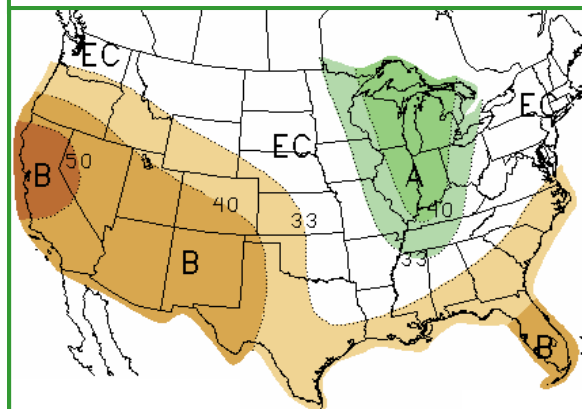
Precipitation: Similar to temperatures, the precipitation outlook depicts the total precipitation for the entire 3-month period, and is independent of individual days or months. **Green** colors represent "wetter" than normal and **brown** colors represent "drier" than normal. The white "Equal Chances" area is also present and covers nearly the entire local area. This reflects equal chances of experiencing above, near or below normal precipitation. However, far southwestern parts of the area are very slightly favored to measure below normal precipitation. Like the temperature outlook, this outlook does not forecast *how much* above (below) normal precipitation might be.

To recap, the outlook for Spring 2013 (March-April-May) slightly favors above normal temperatures, but with equal chances of above, near or below normal precipitation across most of the local area.

Temperature Outlook for Spring 2013 (March-May)



Precipitation Outlook for Spring 2013 (March-May)



To view these and other Climate Prediction Center outlooks visit <http://www.cpc.ncep.noaa.gov/>

National Weather Service

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Meet the Rest of the Staff at WFO Hastings

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Steve Eddy

Warning Coordination Meteorologist

Mike Moritz

Science and Operations Officer

Rick Ewald

Data Acquisition Program Manager

Marla Doxey

Electronic Systems Analyst

Mark Fairchild

Information Technology Officer

Carol Cartier

Administrative Assistant

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Electronics Technician

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Lead Forecasters

Merl Heinlein • Jeremy Wesely • Cindy Fay

Shawn Rossi • Scott Bryant

General Forecasters

Julia Berg • Angela Oder

Ryan Pfannkuch • Jeff Halblaub